

## **CHAPTER 2**

### **DESCRIPTION OF THE OCOEE RIVER WATERSHED**

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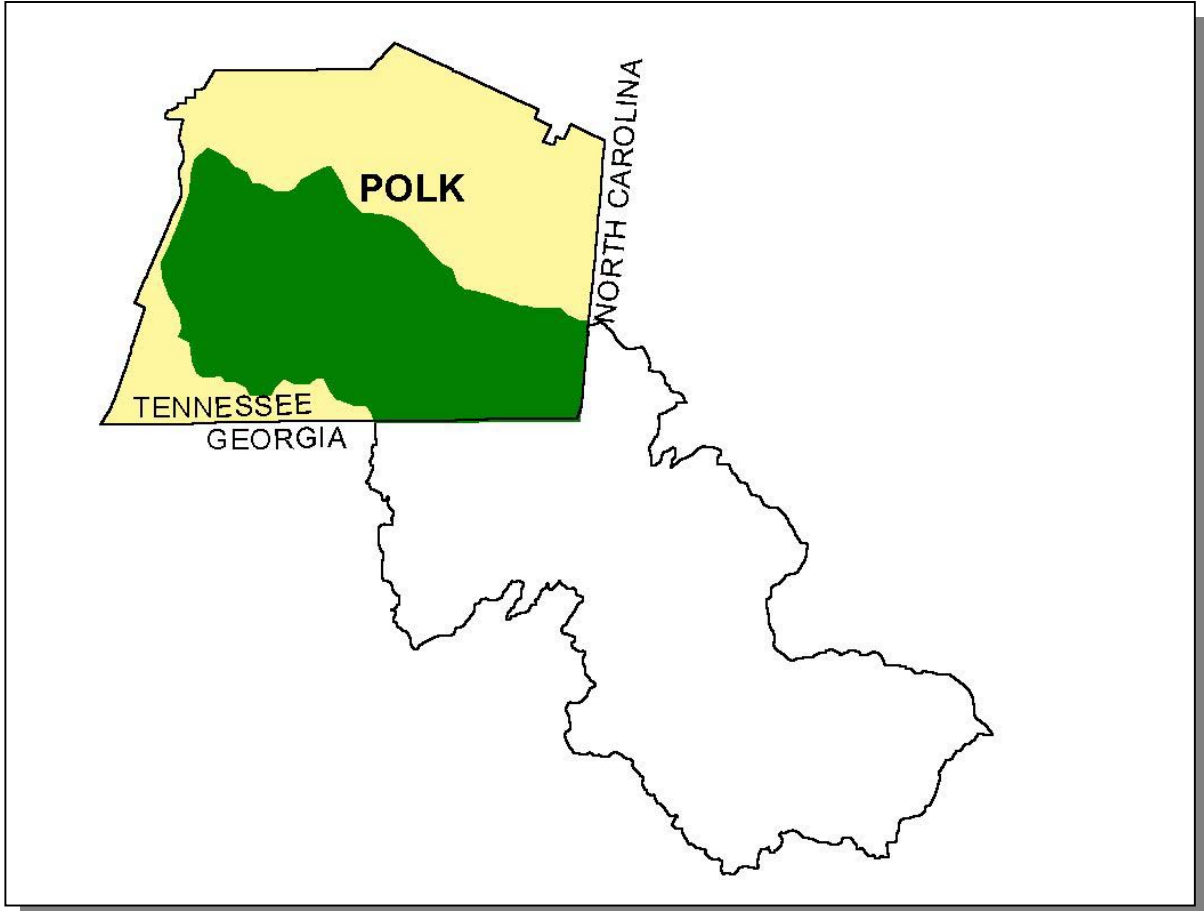
**2.1 BACKGROUND.** Because of its worldwide reputation, the Ocoee River was selected as the site for the 1996 Olympic whitewater boating event. Thousands of people travel to this region every year to challenge the river's mighty rapids, swim in countless "dry river" pools, or simply to view the lush beauty of the Ocoee River Gorge along the Ocoee Scenic Byway.

The Ocoee River Watershed includes cool, clear streams with high gradient in the Blue Ridge Mountains, and great aquatic habitat diversity in the Ridge and Valley region.

This Chapter describes the location and characteristics of the Ocoee River Watershed.

## 2.2. DESCRIPTION OF THE WATERSHED.

**2.2.A. General Location.** The Tennessee portion of the Ocoee River Watershed is wholly contained within Polk County in East Tennessee.

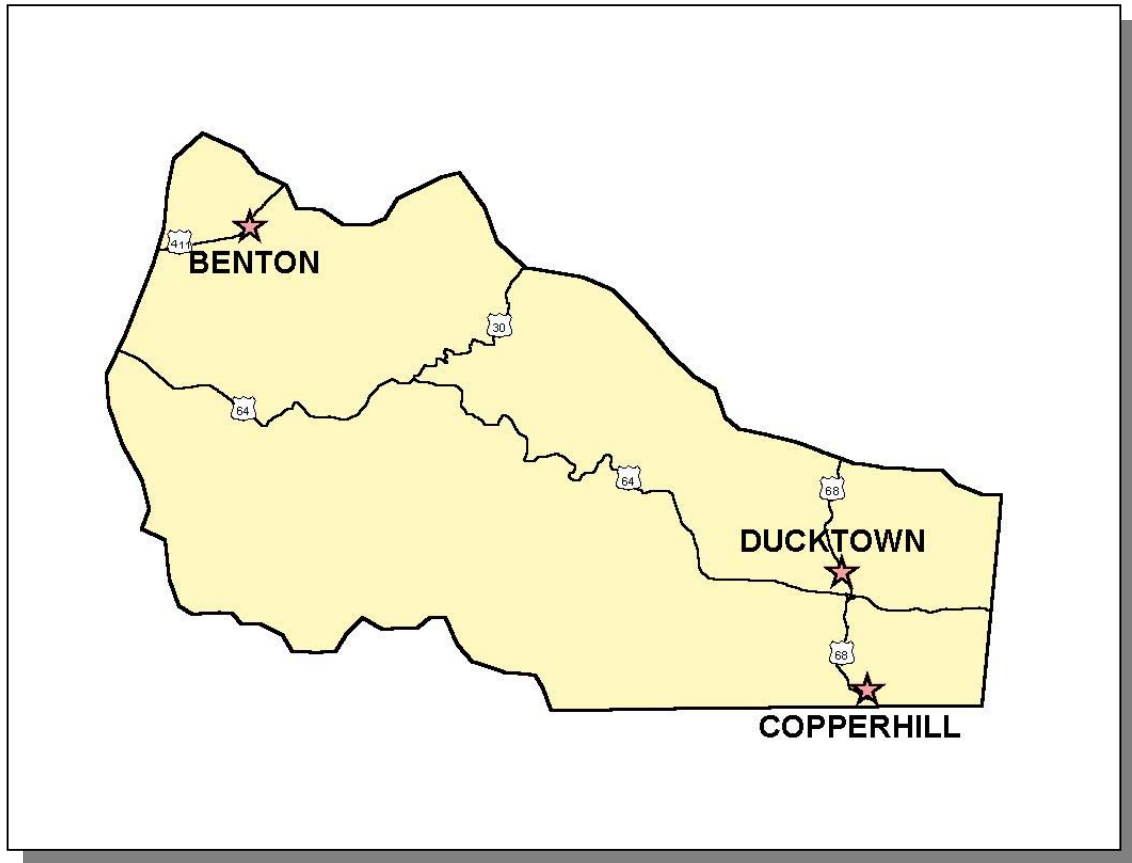


*Figure 2-1. General Location of the Ocoee River Watershed.*

COUNTY	% OF WATERSHED IN EACH COUNTY
Polk	100

*Table 2-1. The Ocoee River Watershed Is Contained Entirely Within Polk County.*

**2.2.B. Population Density Centers.** Four state highways serve the major communities in the Ocoee River Watershed.



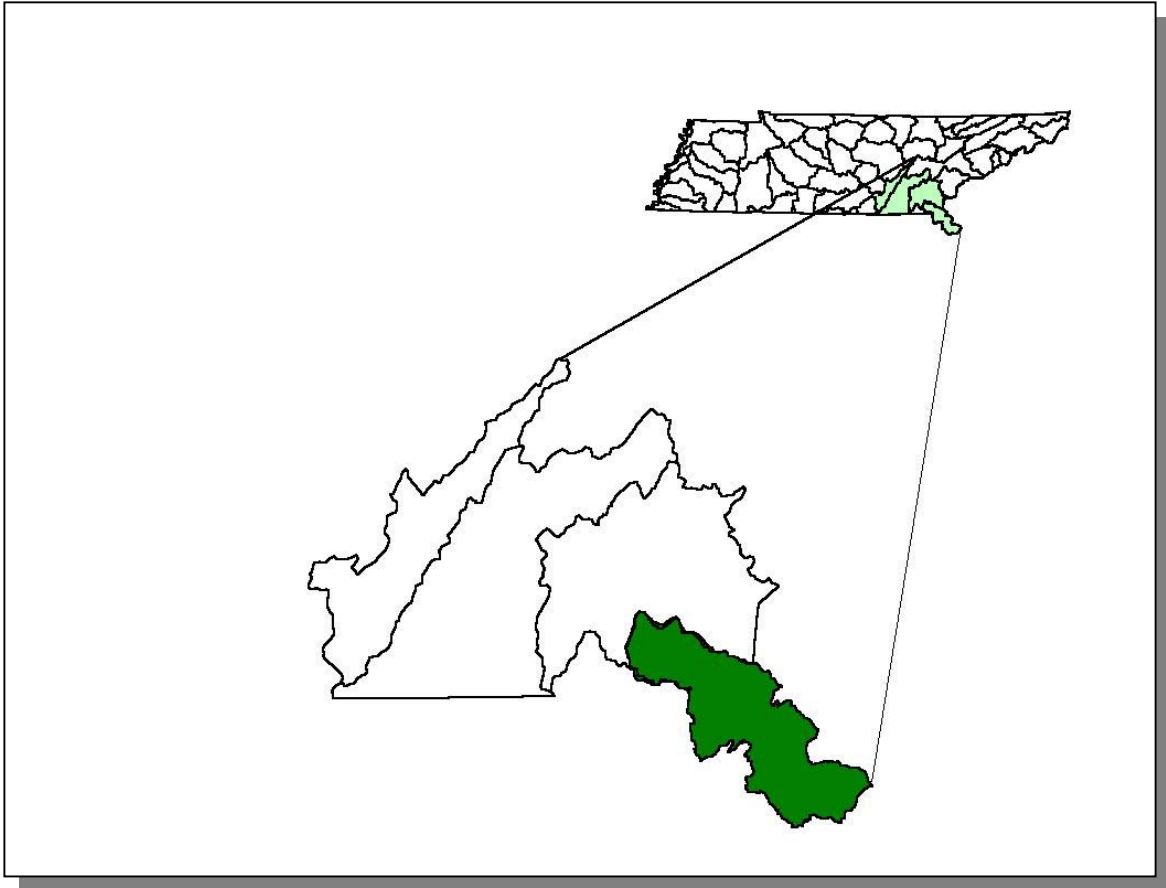
**Figure 2-2. Municipalities and Roads in the Ocoee River Watershed.**

MUNICIPALITY	POPULATION	COUNTY
Benton*	992	Polk
Ducktown	421	Polk
Copperhill	362	Polk

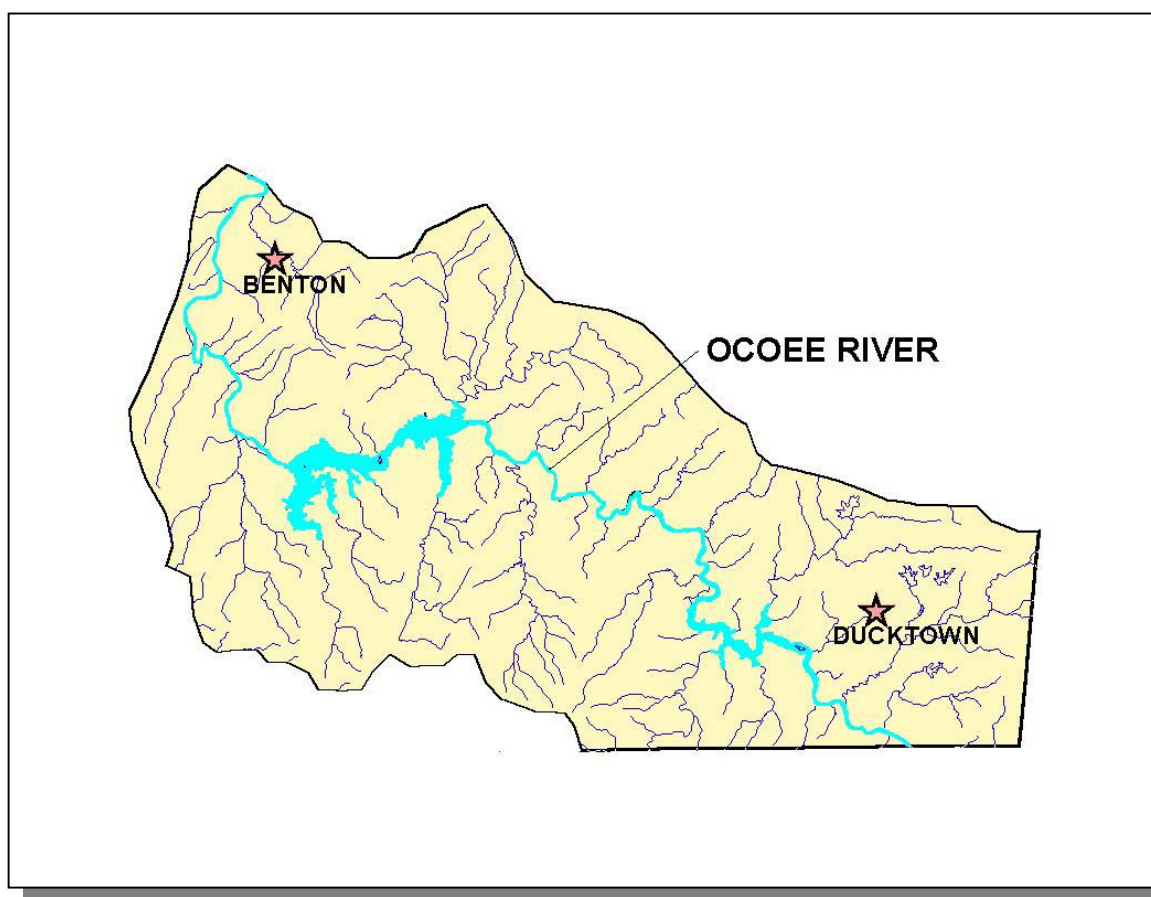
**Table 2-2. Municipalities in the Ocoee River Watershed.** Population based on 1990 census (Tennessee Blue Book). Asterisk (\*) indicates county seat.

## 2.3. GENERAL HYDROLOGIC DESCRIPTION.

**2.3.A. Hydrology.** The Ocoee River Watershed, designated the Hydrologic Unit Code (HUC) 06020003 by the USGS, is approximately 665 square miles (207 of which are in Tennessee) and drains to the Hiwassee River.

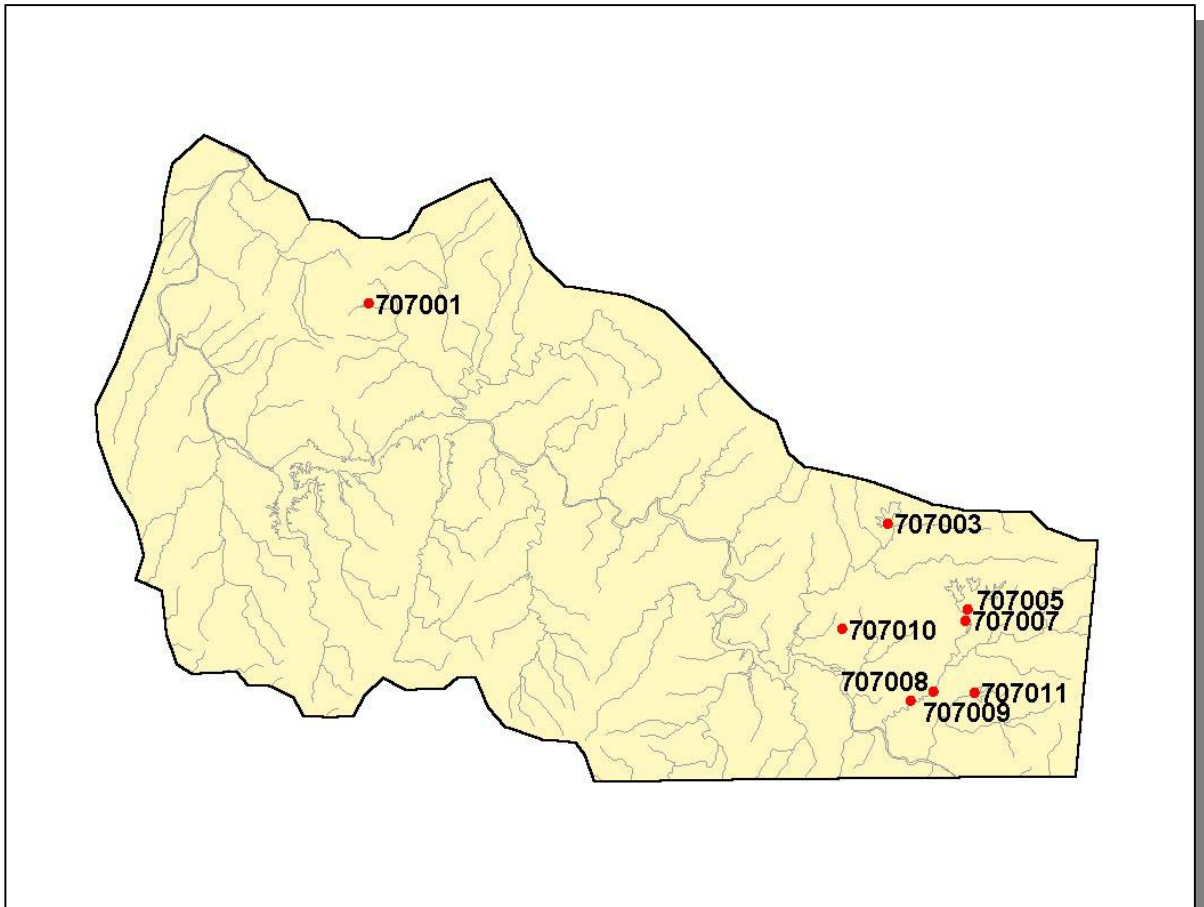


*Figure 2-3. The Ocoee River Watershed is Part of the Lower Tennessee River Basin.*



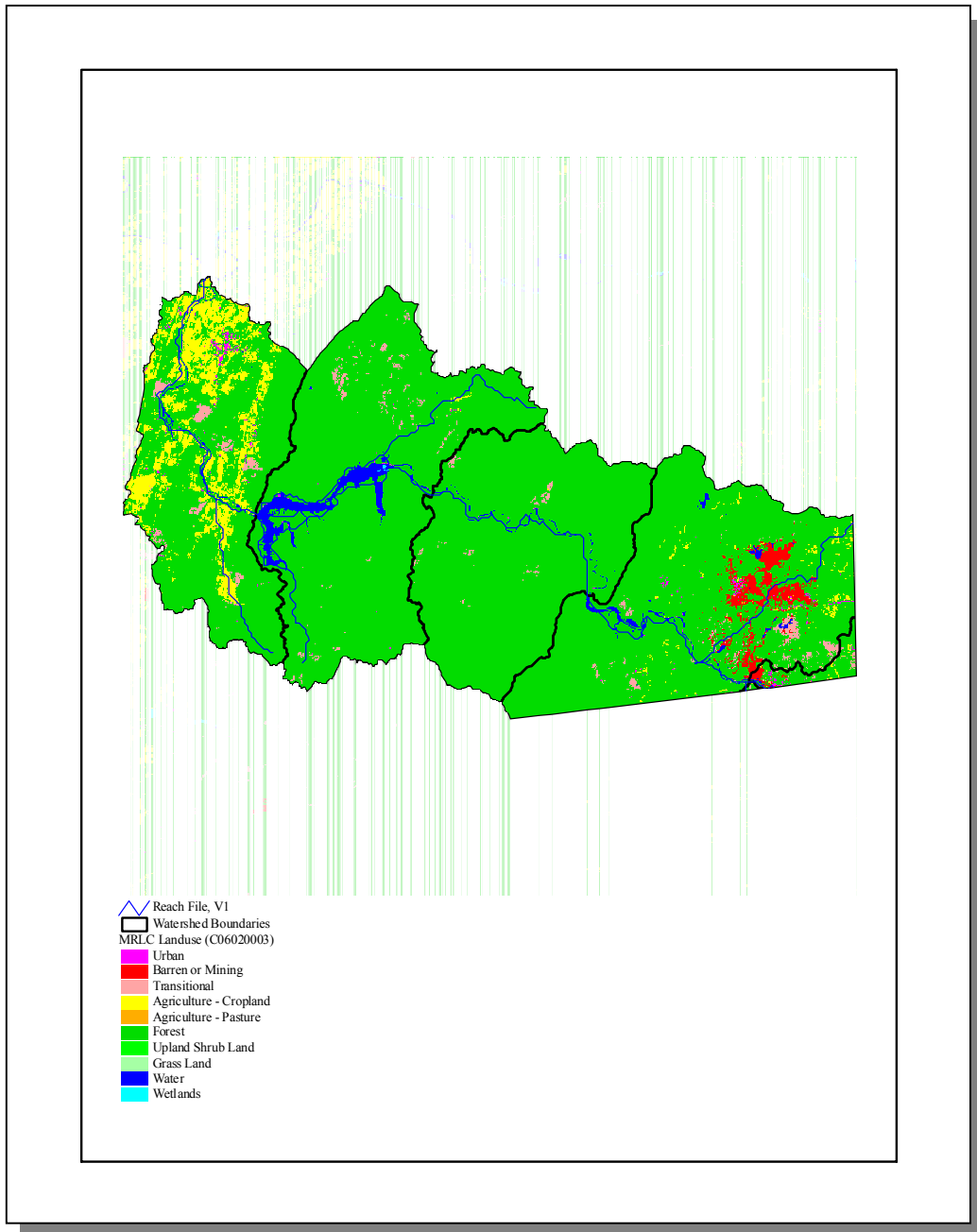
**Figure 2-4. Hydrology in the Ocoee River Watershed.** There are 314 stream miles and 2,881 lake acres recorded in River Reach File 3 in the Tennessee Portion of the Ocoee River Watershed. Locations of Ocoee River and the cities of Benton and Ducktown are shown for reference.

**2.3.B. Dams.** There are 8 dams inventoried by TDEC Division of Water Supply in the Ocoee River Watershed. These dams either retain at least 30 acre-feet of water or have structures at least 20 feet high. Additional dams may be found in the watershed.

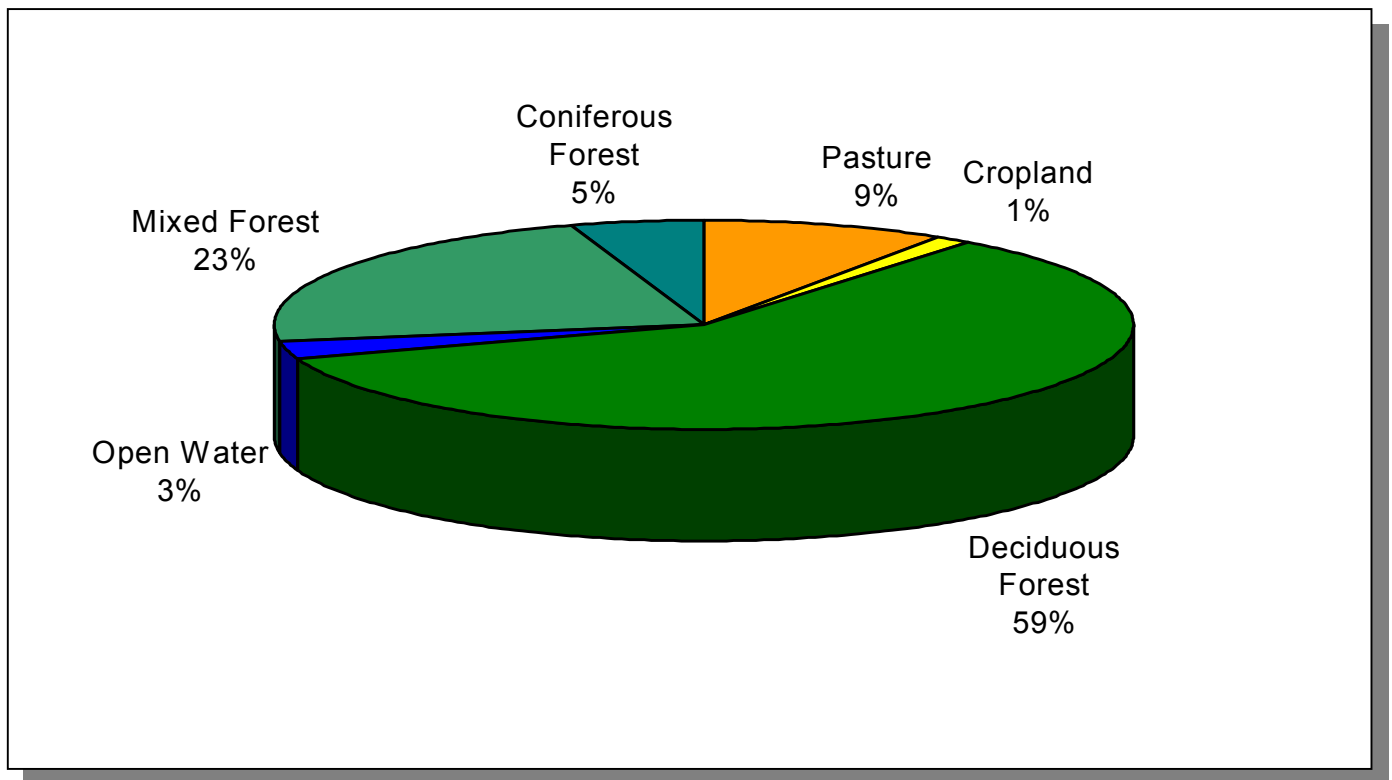


**Figure 2-5. Location of Inventoried Dams in the Ocoee River Watershed.** Additional information is provided in Ocoee-Appendix II.

**2.4 LAND USE.** Land Cover/Land Use information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.



**Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.**



**Figure 2-7. Land Use Distribution in the Ocoee River Watershed.** More information is provided in Ocoee-Appendix II.

**2.5 ECOREGIONS AND REFERENCE STREAMS.** Ecoregions are defined as relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies include the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

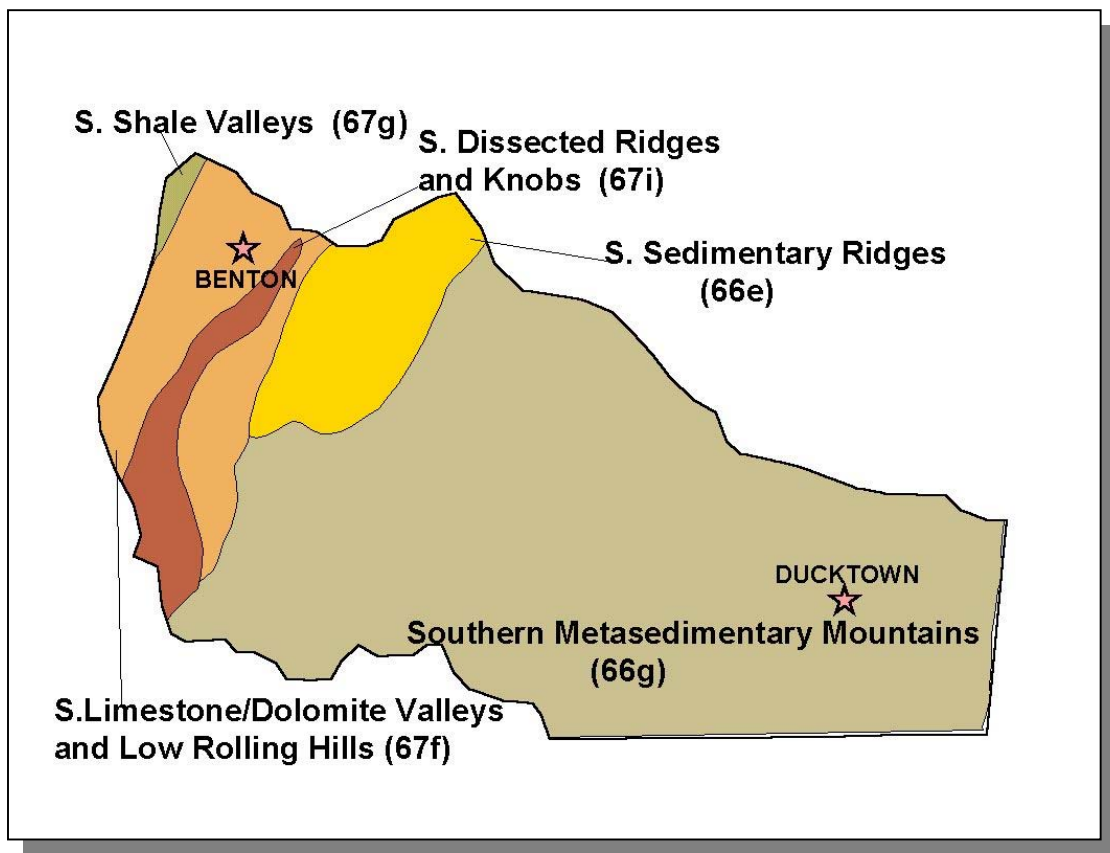
There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Ocoee River Watershed lies within 2 Level III ecoregions (Blue Ridge Mountains, Ridge and Valley) and contains 5 Level IV subecoregions (Griffen, Omernik, Azavedo, 1997):

- The Southern Sedimentary Ridges (66e) in Tennessee include some of the westernmost foothill areas of the Blue Ridge Mountains ecoregion, such as the Bean, Starr, Chilhowee, English, Stone, Bald, and Iron Mountain areas. Slopes are steep, and elevations are generally 1000-4500 feet. The rocks are primarily Cambrian-age sedimentary (shale, sandstone, siltstone,



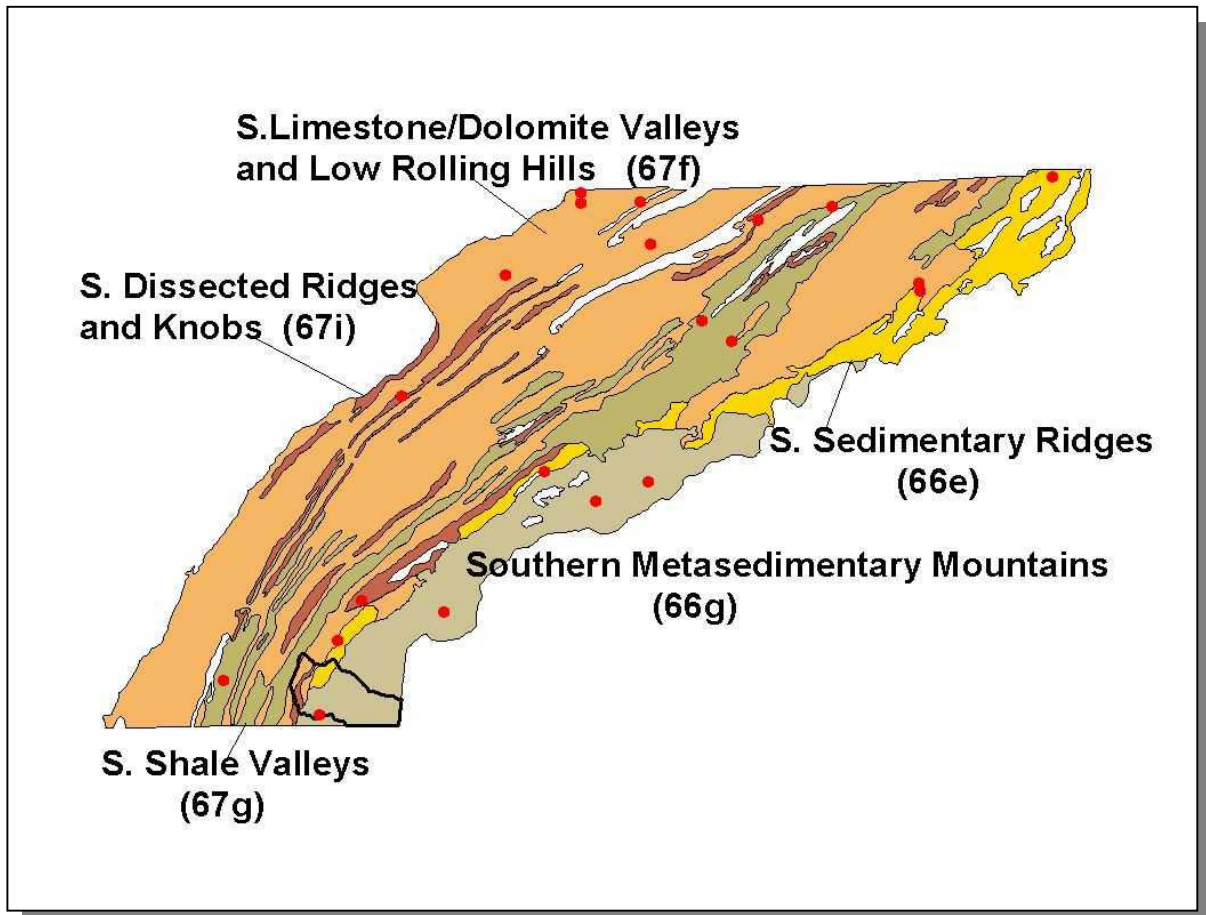
quartzite, conglomerate), although some lower stream reaches occur on limestone. Soils are predominantly friable loams and fine sandy loams with variable amounts of sandstone rock fragments, and support mostly mixed oak and oak-pine forests.

- The Southern Metasedimentary Mountains (66g) are steep, dissected, biologically diverse mountains that include Clingmans Dome (6643 feet), the highest point in Tennessee. The Precambrian-age metamorphic and sedimentary geologic materials are generally older and more metamorphosed than the Southern Sedimentary Ridges (66e) to the west and north. The Appalachian oak forests and, at higher elevations, the northern hardwoods forests include a variety of oaks and pines, as well as silverbell, hemlock, yellow poplar, basswood, buckeye, yellow birch, and beech. Spruce-fir forests, found generally above 5500 feet, have been affected greatly over the past twenty-five years by the balsam wooly aphid. The Copper Basin, in the southeast corner of Tennessee, was the site of copper mining and smelting from the 1850's to 1987, and once left more than fifty square miles of eroded bare earth.
- The Southern Limestone/Dolomite Valleys and Low Rolling Hills (67f) form a heterogeneous region composed predominantly of limestone and cherty dolomite. Landforms are mostly low rolling ridges and valleys, and the soils vary in their productivity. Landcover includes intensive agriculture, urban and industrial, or areas of thick forest. White oak forests, bottomland oak forests, and sycamore-ash-elm riparian forests are the common forest types, and grassland barrens intermixed with cedar-pine glades also occur here.
- The Southern Shale Valleys (67g) consist of lowlands, rolling valleys, and slopes and hilly areas that are dominated by shale materials. The northern areas are associated with Ordovician-age calcareous shale, and the well-drained soils are often slightly acid to neutral. In the south, the shale valleys are associated with Cambrian-age shales that contain some narrow bands of limestone, but the soils tend to be strongly acidic. Small farms and rural residences subdivide the land. The steeper slopes are used for pasture or have reverted to brush and forested land, while small fields of hay, corn, tobacco, and garden crops are grown on the foot slopes and bottom land.
- The Southern Dissected Ridges and Knobs (67i) contain more crenulated, broken, or hummocky ridges, compared to the smoother, more sharply pointed sandstone ridges of Ecoregion 67h. Although shale is common, there is a mixture and interbedding of geologic materials. The ridges on the east side of Tennessee's Ridge and Valley tend to be associated with the Ordovician-age Sevier shale, Athens shale, and Holston and Lenoir limestones. These can include calcareous shale, limestone, siltstone, sandstone, and conglomerate. In the central and western part of Ecoregion 67, the shale ridges are associated with the Cambrian-age Rome Formation: shale and siltstone with beds of sandstone. Chestnut oak forest and pine forests are typical for the higher elevations of the ridges, with areas of white oaks, mixed mesophytic forest, and tulip poplar on the lower slopes, knobs, and draws.



**Figure 2-8. Level IV Ecoregions in the Ocoee River Watershed.** Locations of Benton and Ducktown are shown for reference.

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

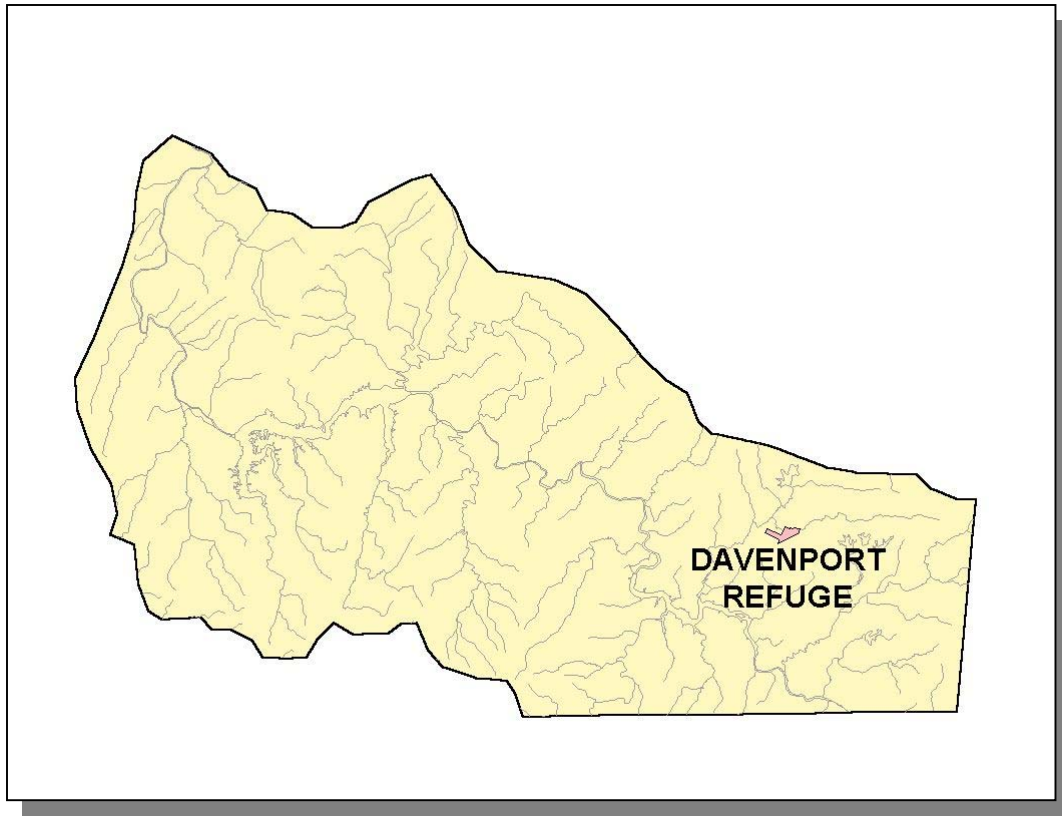


**Figure 2-9. Ecoregion Monitoring Sites in Level IV Ecoregions 66e, 66g, 67f, 67g, and 67i.** The Ocoee River Watershed is shown for reference. Additional information is provided in Ocoee-Appendix II.

## **2.6. NATURAL RESOURCES.**

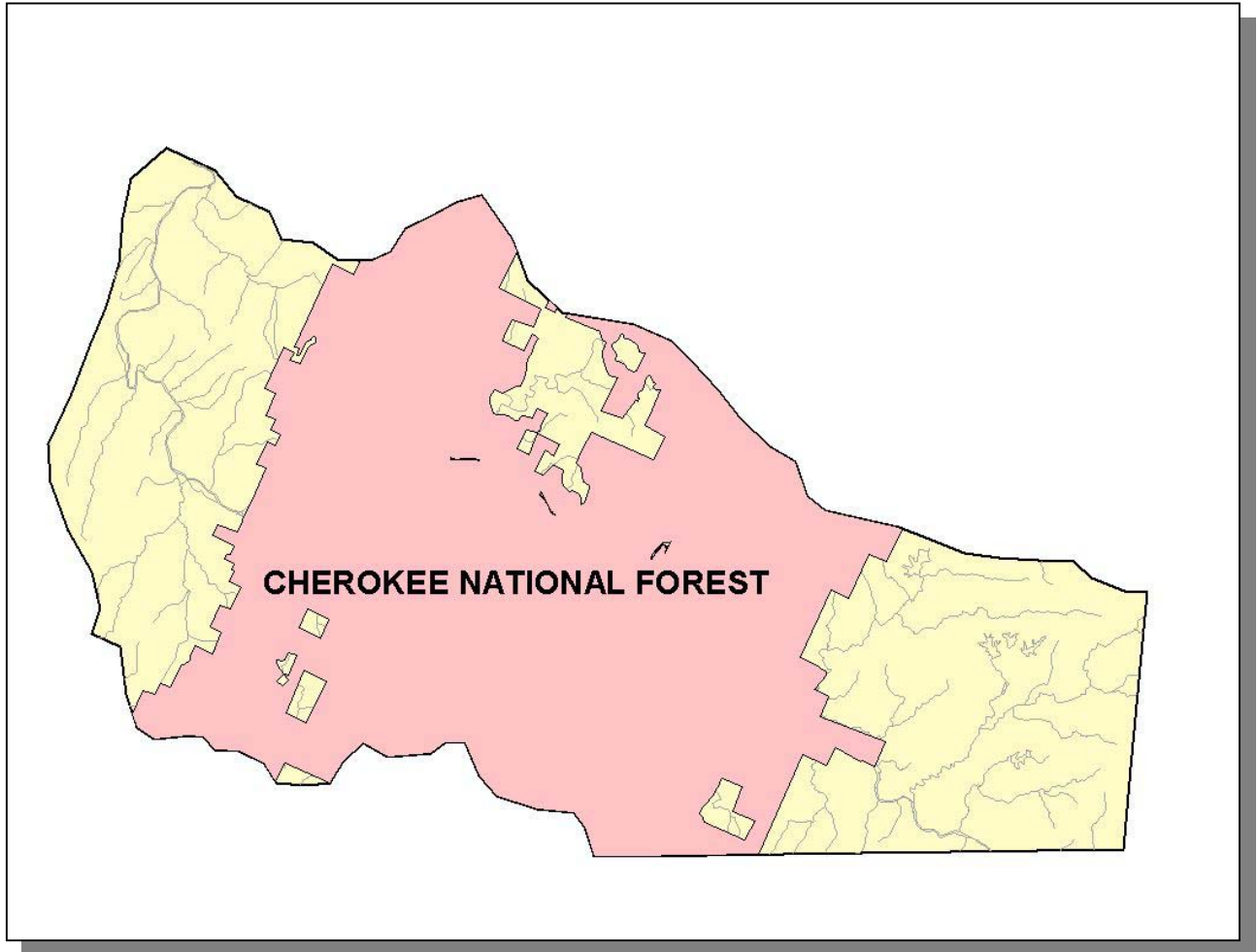
**2.6.A. Designated State Natural Areas.** The Natural Areas Program was established in 1971 with the passage of the Natural Areas Preservation Act. The Ocoee River Watershed has one Designated Natural Area:

Davenport Refuge Designated State Natural Area is 120 acres and includes a globally rare southern Appalachian bog community.



***Figure 2-10. The Davenport Refuge Designated State Natural Area is in the Ocoee River Watershed.***

**2.6.B. National Forest.** Covering 630,000 acres (120 square miles in the Tennessee portion of the Ocoee River Watershed), the Cherokee National Forest is the largest tract of public land in the state. It is managed for multiple uses by the U.S. Department of Agriculture—Forest Service.



*Figure 2-11. Location of Cherokee National Forest in Ocoee River Watershed.*

**2.6.C. Rare Plants and Animals.** The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the Federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Crustaceans	0
Insects	0
Mussels	0
Snails	1
Amphibians	2
Birds	1
Fish	2
Mammals	0
Reptiles	2
Plants	28
<b>Total</b>	<b>36</b>

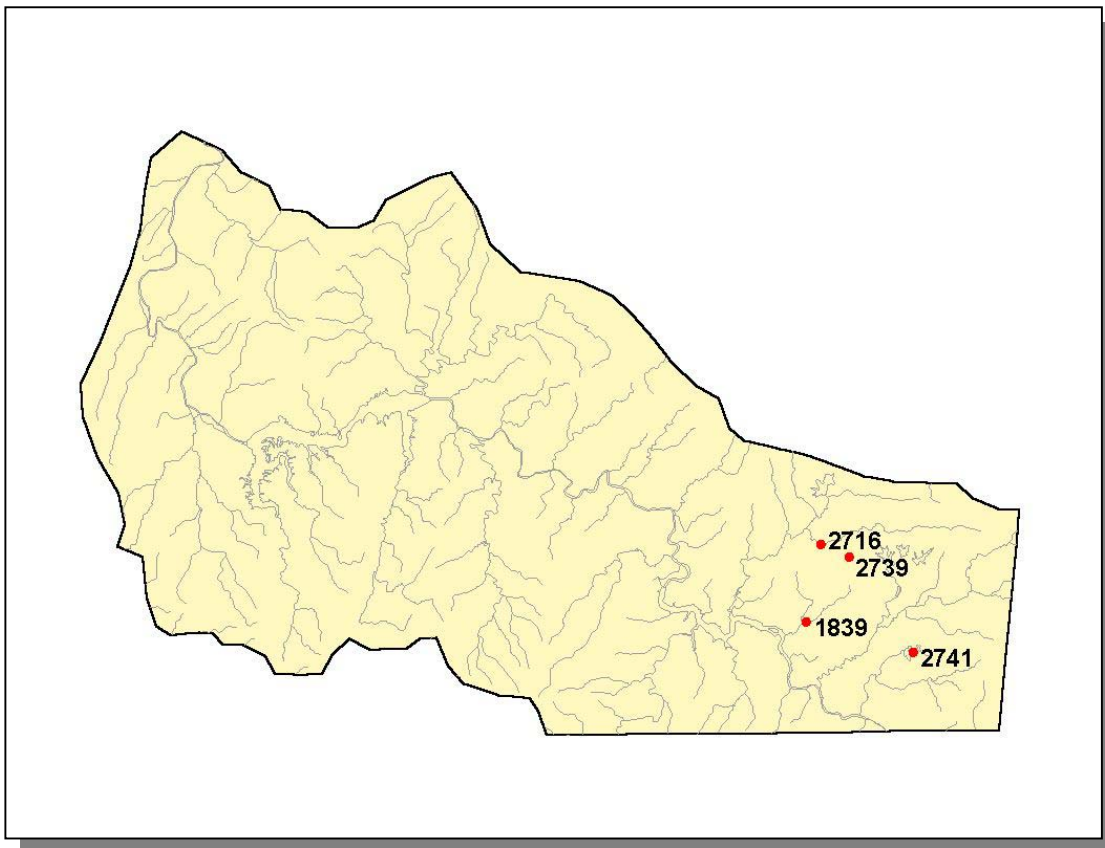
**Table 2-3. There are 36 Documented Rare Plant and Animal Species in the Ocoee River Watershed. Additional rare plant and animal species may be present.**

Additionally, in the Ocoee River Watershed, there are two rare fish species and one rare snail species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
<i>Hybopsis lineapunctata</i>	Lined chub		D
<i>Phoxinus tennesseensis</i>	Tennessee dace		D
<i>Mesodon archeri</i>	Ocoee covert		

**Table 2-4. Rare Aquatic Species in the Ocoee River Watershed.** State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency.

**2.6.D. Wetlands.** The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at <http://www.state.tn.us/environment/epo/wetlands/strategy.zip>.



**Figure 2-12. Location of Wetland Sites in TDEC Division of Natural Heritage Database in Ocoee River Watershed.** There may be additional wetland sites in the watershed. Additional information is provided in Ocoee-Appendix II.

## 2.7. CULTURAL RESOURCES.

**2.7.A. Nationwide Rivers Inventory.** The Nationwide Rivers Inventory, required under the Federal Wild and Scenic Rivers Act of 1968, is a listing of free-flowing rivers that are believed to possess one or more outstanding natural or cultural values. Exceptional scenery, fishing or boating, unusual geologic formations, rare plant and animal life, cultural or historic artifacts that are judged to be of more than local or regional significance are the values that qualify a river segment for listing. The Tennessee Department of Environment and Conservation and the Rivers and Trails Conservation Assistance branch of the National Park Service jointly compile the Nationwide Rivers Inventory from time to time (most recently in 1997). Under a 1980 directive from the President's Council on Environmental Quality, all Federal agencies must seek to avoid or mitigate actions that would have an adverse effect on Nationwide Rivers Inventory segments.

The most recent version of the Nationwide Rivers Inventory lists two portions of the Ocoee River in the Ocoee River Watershed:

Ocoee River. (River mile 19, Parksville Reservoir, to river mile 29, Ocoee No. 3 Dam). High quality whitewater stream with spectacular mountain scenery.

Ocoee River. (River mile 14, Parksville Reservoir, to river mile 28, below Ocoee No. 3 Dam). High quality whitewater stream with spectacular mountain scenery.

RIVER	SCENIC	RECREATION	GEOLOGIC	FISH	WILDLIFE
Ocoee River	X	X			
Ocoee River (Below Ocoee Dam)	X	X	X	X	X

*Table 2-5. Attributes of Streams Listed in the Nationwide Rivers Inventory.*

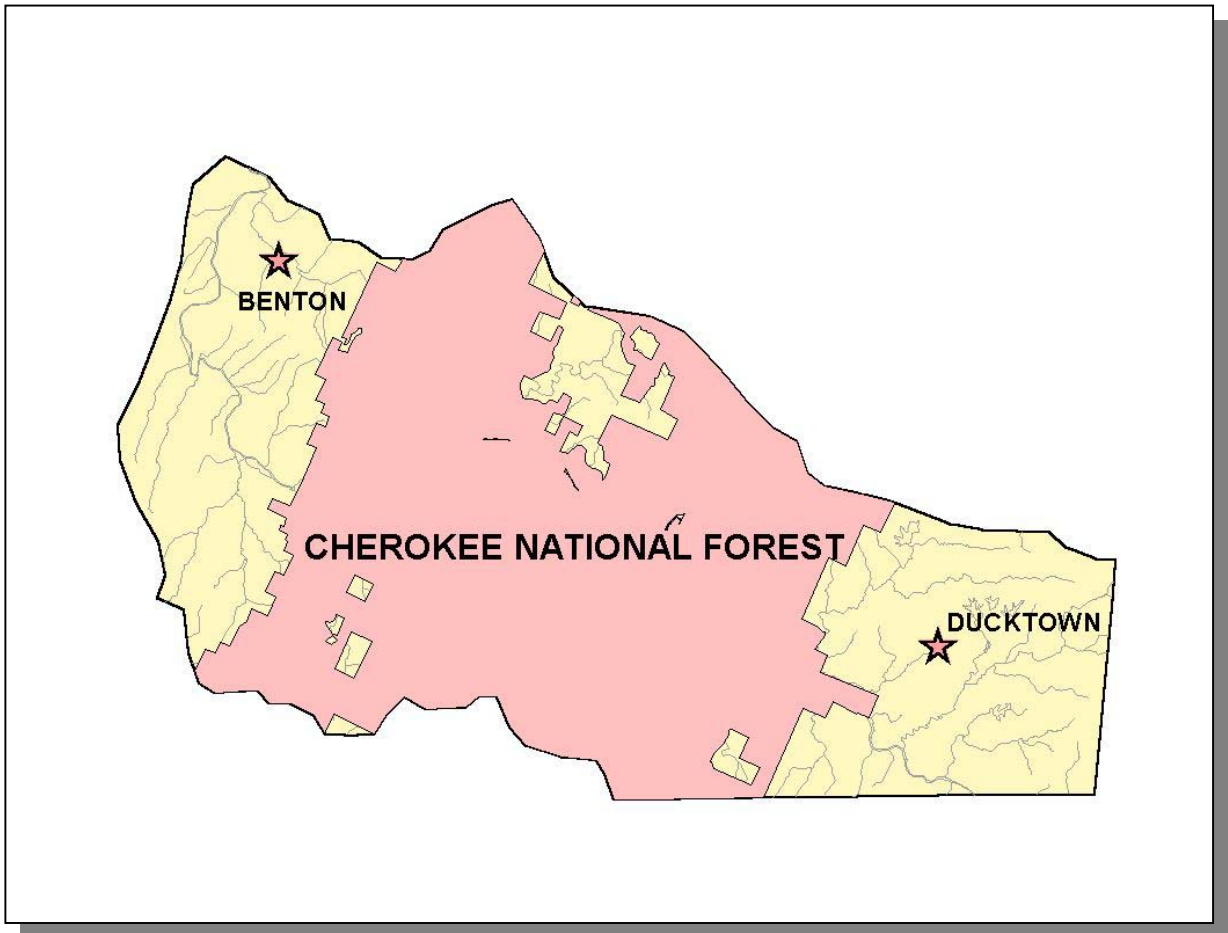
Additional information may be found online at <http://www.ncrc.nps.gov/rtca/nri/tn.htm>

**2.7.B. Interpretive Areas.** Several sites representative of the cultural heritage are under federal protection:

- Old Copper Road Historic Trail, which is designated as a historic site on the National Register of Historic Places, is a road built in 1878 for the transportation of copper ore.
- The Burra Burra Mine site consists of 10 buildings located on 17 acres and is listed in the National Register of Historic Places. Buildings on the site include the mine office, shop building, change house, hoist house, and powder house. The museum interprets the basin's history through audio-visual and artifact exhibits and examples of the kinds of equipment used in the mines. The history of the Cherokee Nation, including its removal from the basin, is also presented.



**2.7.C. Wildlife Management Area.** The U.S. Forest Service manages the Cherokee National Forest, where 620,000 acres provide stable communities for over 1000 species of plants and animals. The area has outdoor recreation and forest products.



**Figure 2-13. The U.S. Forest Service Manages the Cherokee National Forest in the Ocoee River Watershed.**

**2.8. TENNESSEE RIVERS ASSESSMENT PROJECT.** The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

<http://www.state.tn.us/environment/wpc/riv>

STREAM	NSQ	RB	RF	STREAM	NSQ	RB	RF
Big Creek	1	2	1	Ocoee River	3,4	1,2	
East Fork Rough Creek		1		Sylco Creek	2	2	1
Greasey Creek	2		3,4	Tumbling Creek		1	
North Potato Creek			3				

**Table 2-6. Stream Scoring from the Tennessee Rivers Assessment Project.**

Categories: NSQ, Natural and Scenic Qualities  
RB, Recreational Boating  
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery  
2. Regional Significance; Good Fishery  
3. Local Significance; Fair Fishery  
4. Not a significant Resource; Not Assessed as a fishery